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Ride-On Trowel

CRT 48-31V-ES

OPERATOR'S MANUAL

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CALIFORNIA

Proposition 65 Warning:

Engine exhaust, some of its constituents, and certain vehicle components, contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

1. Foreword

This manual provides information and procedures to safely operate and maintain this Wacker model. For your own safety and protection from injury, carefully read, understand and observe the safety instructions described in this manual.

Keep this manual or a copy of it with the machine. If you lose this manual or need an additional copy, please contact Wacker Corporation. This machine is built with user safety in mind; however, it can present hazards if improperly operated and serviced. Follow operating instructions carefully! If you have questions about operating or servicing this equipment, please contact Wacker Corporation.

The information contained in this manual was based on machines in production at the time of publication. Wacker Corporation reserves the right to change any portion of this information without notice.

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Any type of reproduction or distribution not authorized by Wacker Corporation represents an infringement of valid copyrights and will be prosecuted. We expressly reserve the right to make technical modifications, even without due notice, which aim at improving our machines or their safety standards.

2. Safety Information

This manual contains DANGER, WARNING, CAUTION, *NOTICE* and NOTE callouts which must be followed to reduce the possibility of personal injury, damage to the equipment, or improper service.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE: Used without the safety alert symbol, ***NOTICE*** indicates a hazardous situation which, if not avoided, could result in property damage

Note: *Contains additional information important to a procedure*.

2.1 Laws Pertaining to Spark Arresters

Notice: State Health Safety Codes and Public Resources Codes specify that in certain locations spark arresters be used on internal combustion engines that use hydrocarbon fuels. A spark arrester is a device designed to prevent accidental discharge of sparks or flames from the engine exhaust. Spark arresters are qualified and rated by the United States Forest Service for this purpose.

In order to comply with local laws regarding spark arresters, consult the engine distributor or the local Health and Safety Administrator.

2.2 Operating Safety

WARNING

Familiarity and proper training are required for the safe operation of equipment. Equipment operated improperly or by untrained personnel can be dangerous. Read the operating instructions contained in both this manual and the engine manual and familiarize yourself with the location and proper use of all controls. Inexperienced operators should receive instruction from someone familiar with the equipment before being allowed to operate the machine.

2.2.1 NEVER operate this machine in applications for which it is not intended.

2.2.2 NEVER allow anyone to operate this equipment without proper training. People operating this equipment must be familiar with the risks and hazards associated with it.

2.2.3 NEVER touch the engine or muffler while the engine is on or immediately after it has been turned off. These areas get hot and may cause burns.

2.2.4 NEVER use accessories or attachments that are not recommended by Wacker. Damage to equipment and injury to the user may result.

2.2.5 NEVER operate the machine with the beltguard missing. Exposed drive belt and pulleys create potentially dangerous hazards that can cause serious injuries.

2.2.6 NEVER leave machine running unattended.

2.2.7 DO NOT run the machine indoors or in an enclosed area such as a deep trench unless adequate ventilation, through such items as exhaust fans or hoses, is provided. Exhaust gas from the engine contains poisonous carbon monoxide gas; exposure to carbon monoxide can cause loss of consciousness and may lead to death.

2.2.8 ALWAYS remain aware of moving parts and keep hands, feet, and loose clothing away from the moving parts of the equipment.

2.2.9 ALWAYS keep hands, feet, and loose clothing away from moving parts of the machine.

2.2.10 ALWAYS read, understand, and follow procedures in the Operator's Manual before attempting to operate the equipment.

2.2.11 ALWAYS be sure operator is familiar with proper safety precautions and operation techniques before using machine.

2.2.12 ALWAYS close fuel valve on engines equipped with one when machine is not being operated.

2.2.13 ALWAYS store the equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children.

2.2.14 ALWAYS operate the machine with all safety devices and guards in place and in working order.

2.3 Operator Safety while using Internal Combustion Engines

DANGER

Internal combustion engines present special hazards during operation and fueling. Read and follow the warning instructions in the engine owner's manual and the safety guidelines below. Failure to follow the warnings and safety guidelines could result in severe injury or death.

2.3.1 DO NOT run the machine indoors or in an enclosed area such as a deep trench unless adequate ventilation, through such items as exhaust fans or hoses, is provided. Exhaust gas from the engine contains poisonous carbon monoxide gas; exposure to carbon monoxide can cause loss of consciousness and may lead to death.

2.3.2 DO NOT smoke while operating the machine.

2.3.3 DO NOT smoke when refueling the engine.

2.3.4 DO NOT refuel a hot or running engine.

2.3.5 DO NOT refuel the engine near an open flame.

2.3.6 DO NOT spill fuel when refueling the engine.

2.3.7 DO NOT run the engine near open flames.

2.3.8 ALWAYS refill the fuel tank in a well-ventilated area.

2.3.9 ALWAYS replace the fuel tank cap after refueling.

2.3.10 ALWAYS keep the area around the muffler free of debris such as leaves, paper, cartons, etc. A hot muffler could ignite the debris and start a fire.

2.4 Service Safety

WARNING

Poorly maintained equipment can become a safety hazard! In order for the equipment to operate safely and properly over a long period of time, periodic maintenance and occasional repairs are necessary.

2.4.1 DO NOT attempt to clean or service the machine while it is running. Rotating parts can cause severe injury.

2.4.2 DO NOT crank a flooded engine with the spark plug removed on gasoline-powered engines. Fuel trapped in the cylinder will squirt out the spark plug opening.

2.4.3 DO NOT test for spark on gasoline-powered engines if the engine is flooded or the smell of gasoline is present. A stray spark could ignite the fumes.

2.4.4 DO NOT use gasoline or other types of fuels or flammable solvents to clean parts, especially in enclosed areas. Fumes from fuels and solvents can become explosive.

2.4.5 ALWAYS turn engine off and remove key from machine before performing maintenance or making repairs.

2.4.6 ALWAYS handle blades carefully. The blades can develop sharp edges which can cause serious cuts.

2.4.7 ALWAYS keep the area around the muffler free of debris such as leaves, paper, cartons, etc. A hot muffler could ignite the debris and start a fire.

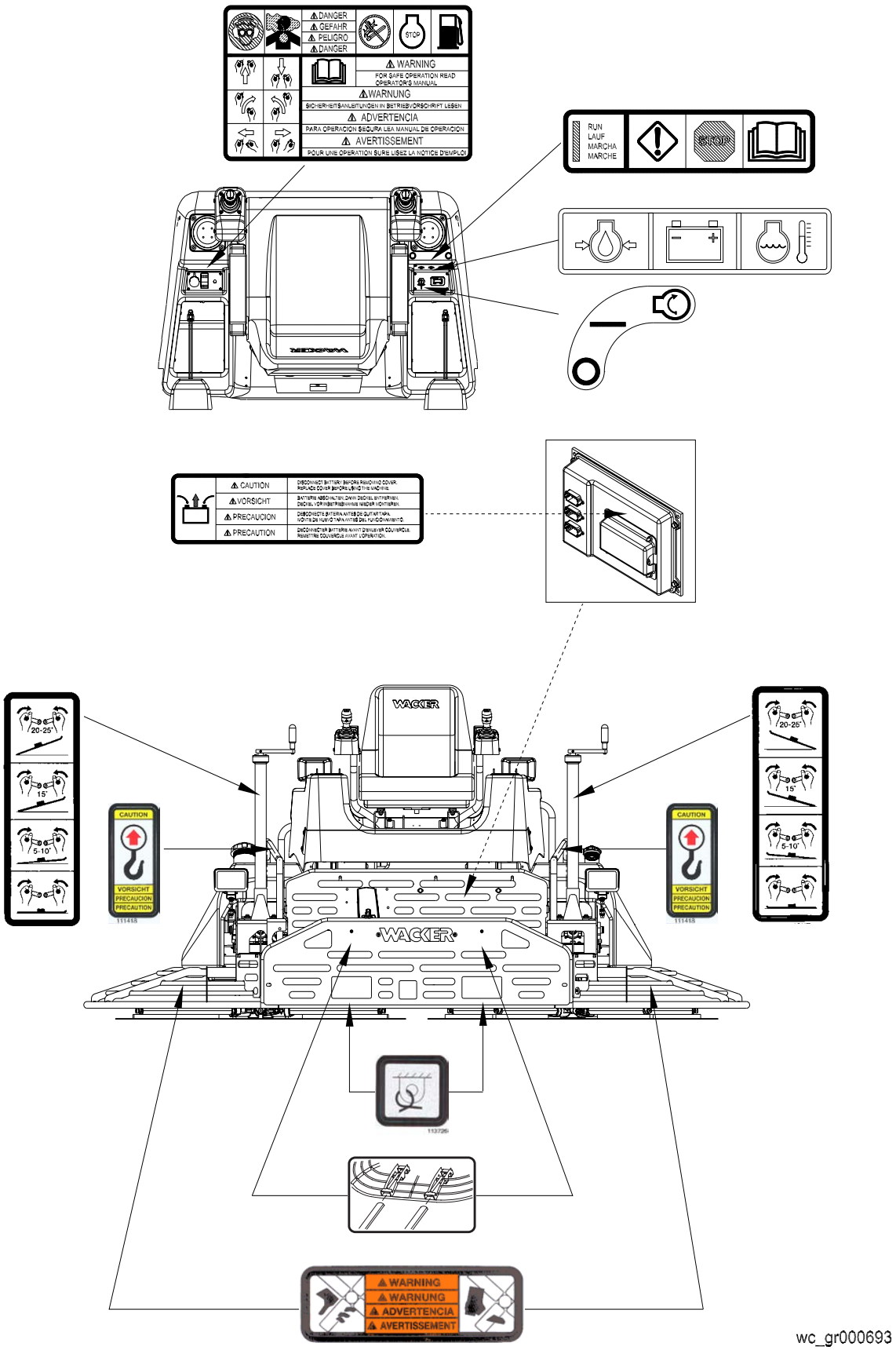
2.4.8 ALWAYS replace worn or damaged components with spare parts designed and recommended by Wacker Corporation.

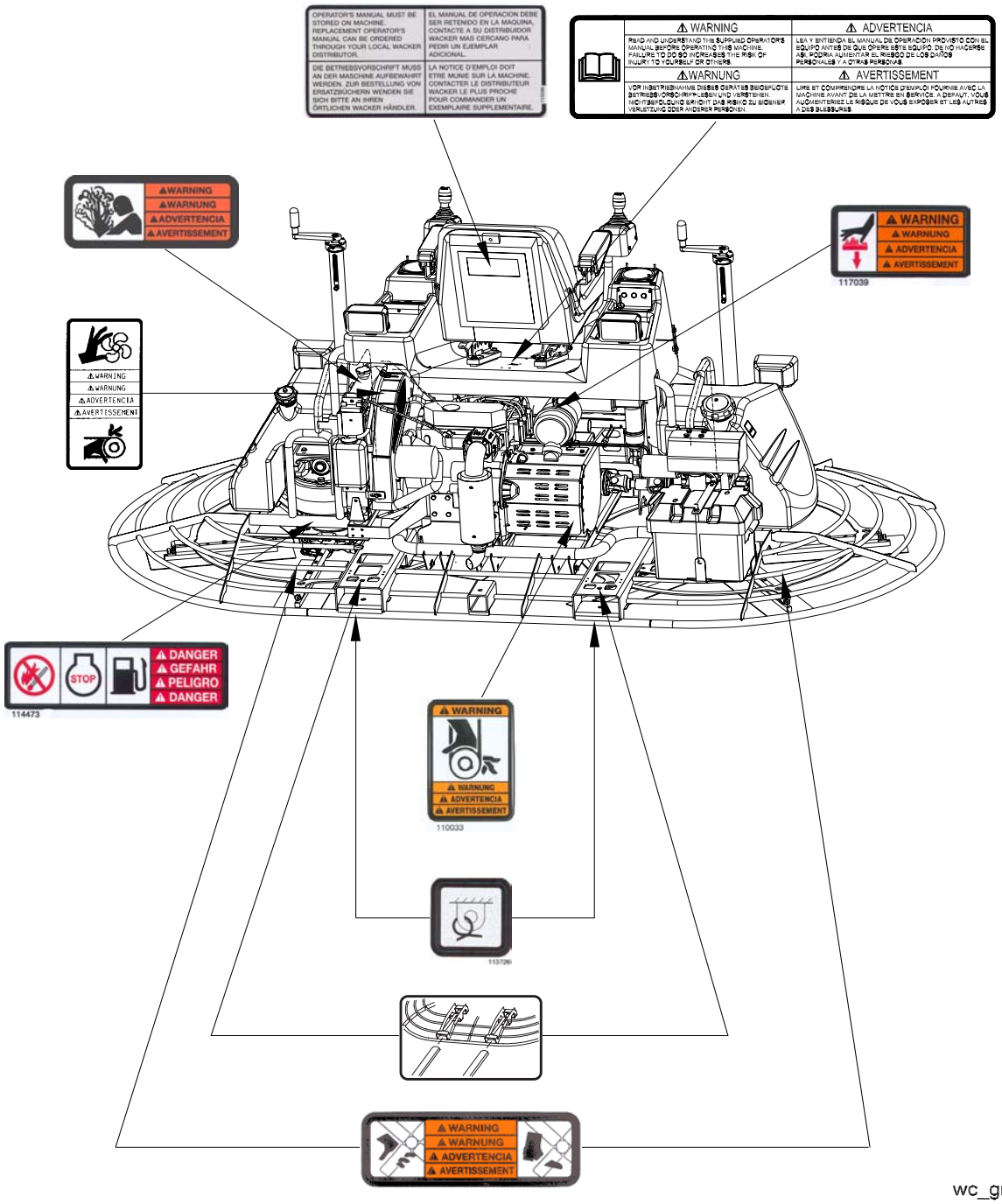
2.4.9 ALWAYS disconnect the spark plug on machines equipped with gasoline engines, before servicing, to avoid accidental start-up.

2.4.10 ALWAYS switch off the power supply at the battery disconnect before adjusting or maintaining the electrical equipment.

2.4.11 ALWAYS keep the machine clean and labels legible. Replace all missing and hard-to-read labels. Labels provide important operating instructions and warn of dangers and hazards.

2.5 Label Locations



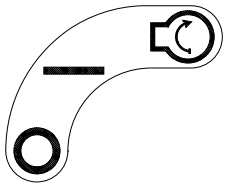
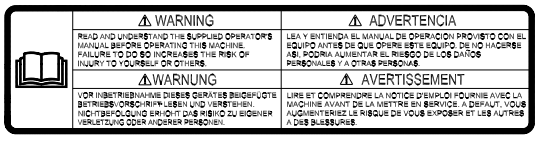

OPERATOR'S MANUAL MUST BE STORED ON MACHINE. REPLACEMENT OPERATOR'S MANUAL CAN BE ORDERED THROUGH YOUR LOCAL WACKER DISTRIBUTOR.
EL MANUAL DE OPERACION DEBE SER RETENIDO EN LA MAQUINA. CONTACTE A SU DISTRIBUIDOR WACKER MAS CERCANO PARA PEDIR UN EJEMPLAR ADICIONAL.
DIE BETRIEBSVORSCHRIFT MUSS AN DER MASCHINE AUFBEWAHRT WERDEN. ZUR BESTELLUNG VON ERSATZEXEMPLAREN WENDEN SIE SICH BITTE AN IHREN ÖRTLICHEN WACKER HÄNDLER.
LA NOTICE D'EMPLOI DOIT ETRE MUNIE SUR LA MACHINE. CONTACTER LE DISTRIBUTEUR WACKER LE PLUS PROCHE POUR COMMANDER UN EXEMPLAIRE SUPPLEMENTAIRE.
WARNING
READ AND UNDERSTAND THE SUPPLIED OPERATOR'S MANUAL BEFORE OPERATING THIS MACHINE. FAILURE TO DO SO INCREASES THE RISK OF INJURY TO YOURSELF OR OTHERS.
ADVERTENCIA
LEA Y ENTIENDA EL MANUAL DE OPERACION PROVISTO CON EL EQUIPO ANTES DE QUE OPERE ESTE EQUIPO. DE NO HACERSE ASI, PODRIA AUMENTAR EL RIESGO DE LOS DAÑOS PERSONALES Y A OTRAS PERSONAS.
WARNUNG
VOR INBETRIEBNAHME DIESES GERÄTES BEDIENLEITUNG SORGFÄLTIG LESEN UND VERSTEHEN. NICHTBEFOLGUNG ERHÖHT DAS RISIKO ZU EIGENER VERLETZUNG ODER ANDERER PERSONEN.
AVERTISSEMENT
LIRE ET COMPRENDRE LA NOTICE D'EMPLOI FOURNIE AVEC LA MACHINE AVANT DE LA METTRE EN SERVICE. A DEFAUT, VOUS AUGMENTERIEZ LE RISQUE DE VOUS EXPOSER ET LES AUTRES A DES BLESSURES.
WARNING
WARNUNG
ADVERTENCIA
AVERTISSEMENT
117039
DANGER
GEFAHR
PELIGRO
DANGER
STOP
114473
110033
133726

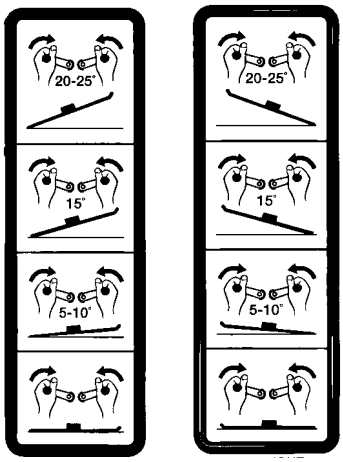
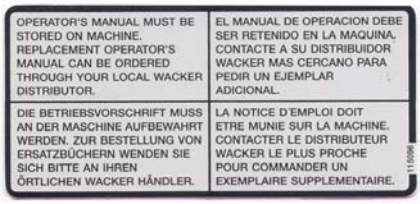
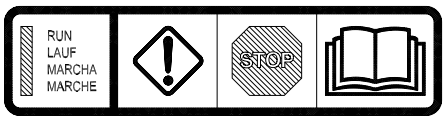
wc_gr000694

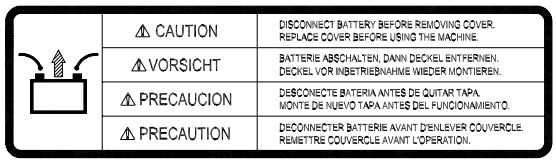
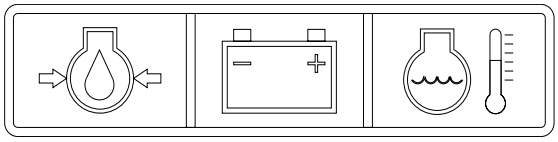
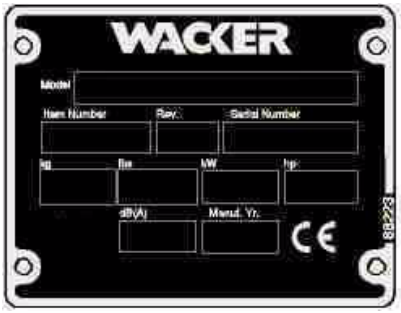
2.6 Safety and Operating Labels

Wacker machines use international pictorial labels where needed. These labels are described below:

Label	Meaning
	DANGER! No sparks, flames or burning objects near machine.
	CAUTION! Use only clean, filtered gasoline fuel.
	Water tank fill. Use only clean water or water-based retardants.
	WARNING! Hot surface!
	DANGER! Engines emit carbon monoxide; operate only in well-ventilated area. Read the Operator's Manual. No sparks, flames, or burning objects near the machine. Shut off the engine before refueling. Steering control. Refer to section *Steering.*
	DANGER! Before fueling, stop the engine. No sparks, flames, or burning objects near the machine.

Label	Meaning
	WARNING! Cutting hazard. Always replace blade guard!
	WARNING! Pressurized contents. Do not open when hot!
	WARNING! Hand injury if caught in moving belt. Always replace beltguard.
	CAUTION! Lifting point.
	Tie-down point.
	Key switch, engine start: Off On Start
	WARNING! Read and understand the supplied Operator's Manual before operating this machine. Failure to do so increases the risk of injury to yourself or others.

Label	Meaning
	Blade pitch control. Turn both controls inward to increase blade pitch. Refer to section *Pitch Adjustment.*
	Operator's Manual must be stored on machine. Replacement Operator's Manual can be ordered through your local Wacker distributor.
	WARNING! Remove pan from trowel before lifting machine overhead. Pans can fall and cause death or serious injury if a person is hit. (Located on top side of float pan.)
	WARNING! Pinching hazard. Rotating machinery.
	Refer to *Status Indicator Lights* section for explanation of this label.

Label	Meaning
	CAUTION! Disconnect battery before removing cover. Replace cover before using the machine.
	CAUTION! Engine oil pressure is low! Stop the engine and check the oil level. CAUTION! Low voltage! Stop the engine and check the charging system. CAUTION! Coolant Temperature is too high. Stop the engine and check the coolant level.
	Use **only** Glygoyle 460 gear oil in gearbox.
	A nameplate listing the model number, item number, revision number, and serial number is attached to each unit. Please record the information found on this plate so it will be available should the nameplate become lost or damaged. When ordering parts or requesting service information, you will always be asked to specify the model number, item number, revision number, and serial number of the unit.
	This machine may be covered by one or more patents.

3. Technical Data

3.1 Engine

Part No.		CRT 48-31V-ES 0009216	CRT 48-31V-ES-E 0009482
Engine			
Engine Make		Vanguard	
Engine Model		DM950G	
Rated Power	kW (Hp)	23.1 (31)	
Displacement	cm^3 (in^3)	950 (58)	
Spark Plug	type	Champion RC12YC	
Electrode Gap	mm (in.)	0.76 (0.030)	
Engine Speed - full load	rpm	4000	
Engine Speed - idle	rpm	1500	
Battery	V / size	12 / Group 24	
Fuel	type	Regular unleaded gasoline	
Fuel Tank Capacity	l (gal.)	24.6 (6.5)	
Fuel Consumption	l (gal.)/hr.	10 (2.6)	
Running Time	hrs.	2.5	
Clutch	type	variable speed	
Low Oil Shutdown		yes	
Engine Oil Capacity	l (qt.)	3.3 (3.5)	
Engine Lubrication	oil grade	SAE 10W30 SH, SJ	
Driveshaft	type	splined universal joint	

3.2 Trowel

Part No.		CRT 48-31V -ES 0009216 Rev. 118 and lower	CRT 48-31V -ES 0009216 Rev. 119 and higher	CRT 48-31V -ES-E 0009482 Rev. 118 and lower	CRT 48-31V -ES-E 0009482 Rev. 119 and higher
Trowel					
Operating Weight	kg (lbs.)	528 (1165)			
Dimensions (L x W x H)	mm (in.)	2665 x 1395 x 1330 (105 x 55 x 52)		2530 x 1397 x 1328 (100 x 55 x 52)	
Rotor Speed (range)	rpm	25-150			
Blade Pitch (range)	degrees	0-25			
Gearbox	type	heavy duty, fan cooled			
Gearbox Lubrication	type	Mobil Oil SHC634	Mobil Glygoyle 460	Mobil Oil SHC634	Mobil Glygoyle 460
	l (oz.)	1.83 (62) each			

Operation			
Troweling Width **with pans** (non-overlapping) **without pans** (overlapping) **without pans** (non-overlapping)	mm (in.)	2465 (97) 2515 (99) --	2465 (97) -- 2413 (95)
Troweling Area **with pans** (non-overlapping) **without pans** (overlapping) **without pans** (non-overlapping)	m^2 (ft^2)	3 (32) 3.2 (34) --	3 (32) -- 2.8 (30)

3.3 Sound and Vibration Specifications

The required sound specification, Paragraph 1.7.4.f of 89/392/EEC Machinery Directive, is:

- the sound pressure level at operator's location (L_{pA}) 91 dB(A)
- the guaranteed sound power level (L_{WA}) 109 dB(A)

These sound values were determined according to ISO 3744 for the sound power level (L_{WA}) and ISO 11204 for the sound pressure level (L_{pA}) at the operator's location.

The weighted effective acceleration value, determined according to ISO 2361-1 and ISO 5349, is:

- for whole body 1.29 m/s^2
- for hand/arm 2.85 m/s^2

The sound and vibration specifications were obtained with the unit operating on fully cured, water wetted concrete at nominal engine speed.

4. Operation

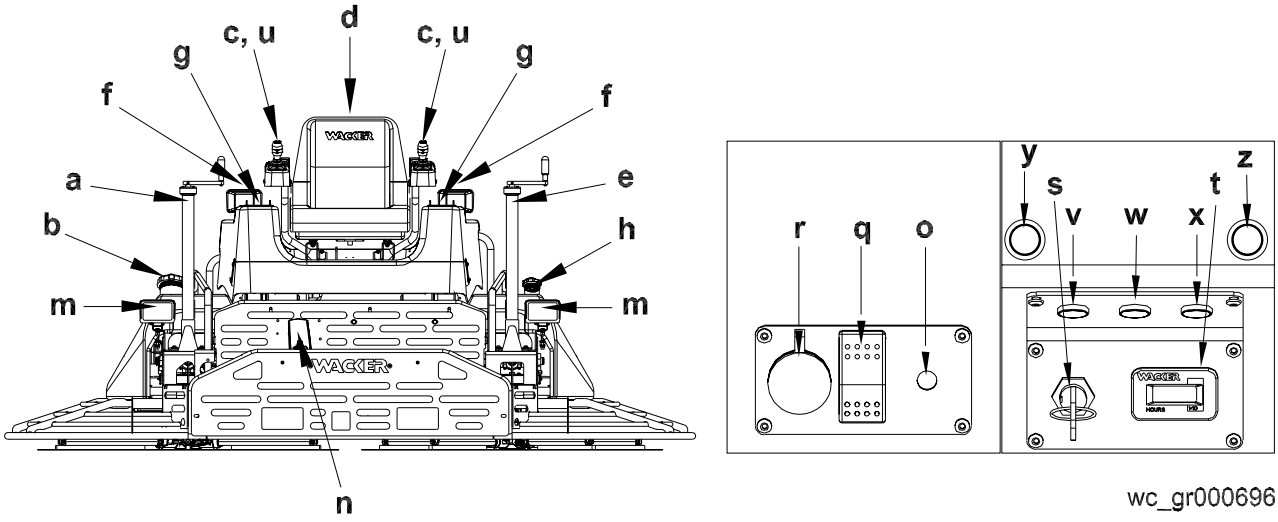
4.1 Description

The Riding Trowel is a modern, high production machine. Finishing rate will vary depending on operator skill and job conditions. The heavy-duty gearboxes are designed to provide exceptional performance, low maintenance, and trouble-free use in most conditions. The low speed unit is designed to provide higher torque, to optimize performance with the use of pans. However, either machine can be configured to be non-overlapping or overlapping, and can therefore use either two pans or ten finishing blades.

All WACKER Riding Trowels are equipped with a fail-safe kill circuit and a low oil shutdown added job safety and engine protection. Operating time between fuel refills is approximately 4–4½ hours with rotor speeds between 80 and 120 rpm.

WACKER Riding Trowels are the most technically advanced trowels on the market today. With proper maintenance and use, your Riding Trowel will provide you with exceptional service.

4.2 Features and Controls



Ref.	Description	Ref.	Description
a	Right pitch control	**q**	Work light switch
b	Water tank	**r**	DC accessory outlet
c	Joystick	**s**	Engine keyswitch
d	Operator's seat with "operator presence" switch	**t**	Hour meter
e	Left pitch control	**u**	Water spray control
f	Rear work light (one each side)	**v**	Oil pressure indicator light
g	Control panel	**w**	Alternator charging indicator light
h	Fuel tank	**x**	Coolant temperature indicator light
m	Work light (one each side)	**y**	Status OK indicator light (green)
n	Foot pedal (throttle control)	**z**	Status error indicator light (red)
o	Engine choke control		

The Riding Trowel features a seat with an integrated "operator presence" system, which works in conjunction with a throttle mounted switch. This system allows the engine to remain running (idling) with no operator seated in the seat, as long as the throttle is not depressed. This system meets all safety requirements and eliminates the need for a foot-operated "kill switch".

To familiarize a new operator with the Riding Trowel the following steps should be taken:

4.2.1 With the operator in the seat, show him or her the functions of the joysticks **(c)** and how to start the machine.

4.2.2 Have the operator practice steering the trowel. A hard concrete slab slightly wetted with water is an ideal place for an operator to practice with the machine. For this practice, pitch the blades up approximately ¼" on the leading edge. Start by making the machine hover in one spot, and then practice driving the machine in a straight line and making 180° turns. The **best control** is achieved at full rpm.

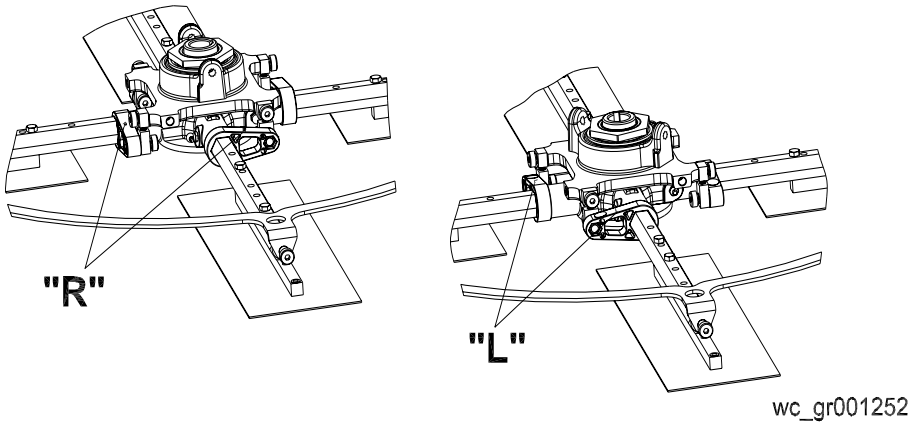
4.3 New Machines

See Graphic: wc_gr001252

4.3.1 To break in the gearboxes, run the engine at 50% of full throttle for the first 2–4 hours. This will prevent premature wear and extend gear life.

***NOTICE*:** Running the engine at full throttle during the break-in period could result in premature gear failure.

4.3.2 Verify that the the horizontal blade pitch links are properly assembled. When seated on the machine, the right rotor should have an **"R"** designation located towards the upper portion of the pitch link and the left rotor should have an **"L"**.



wc_gr001252

4.4 Before Starting

Before starting the trowel, check the following:

- fuel level
- oil level in the engine
- condition of the air filter
- condition of trowel arms and blades

Grease the trowel arms daily.

4.5 Starting

Before starting the operator must know the location and function of all controls.

4.5.1 Push down on the throttle foot pedal, turn the engine keyswitch **(s),** and hold it until the engine starts.

Note: *If the engine is cold, pull out the choke control knob fully.*

***NOTICE*:** Cranking the engine for more than 5 seconds can cause starter damage. If the engine fails to start, release the keyswitch and wait 10 seconds before operating the starter again.

Note: *The engine has an oil alert switch designed to stop the engine automatically if the oil level gets too low. If engine will not start, or stops during operation, check engine oil level.*

4.5.2 Allow the engine to warm up before operating the trowel.

4.6 Stopping

To stop trowel movement, return joystick(s) or control levers to their neutral position and release pressure on the throttle foot pedal.

To stop the engine, turn the keyswitch to “O” (off).

4.7 Operation

To utilize your WACKER Riding Trowel to its fullest capacity, the machine should be driven in the direction that the operator is facing. This will finish the widest possible area, while giving the operator an excellent view of the slab surface about to be troweled. When the machine reaches the end of the slab, make a 180° U-turn, and repeat the straight line of direction to the other end of the slab.

Note: *During the break-in period, run the engine at 50% of full throttle. Refer to Section New Machines.*

***NOTICE*: DO NOT** use excessive pressure on the control levers. Excessive pressure does not increase the reaction time of the machine and can damage the steering controls.

***NOTICE*:** Attempting to use the trowel too early in the curing stage of the concrete may result in an undesirable finish. Only experienced concrete finishers should operate the trowel.

4.8 Steering

See Graphic: wc_gr000688

Refer to the illustration for the necessary hand motions to move the trowel in the desired direction, described below.

1 - forward

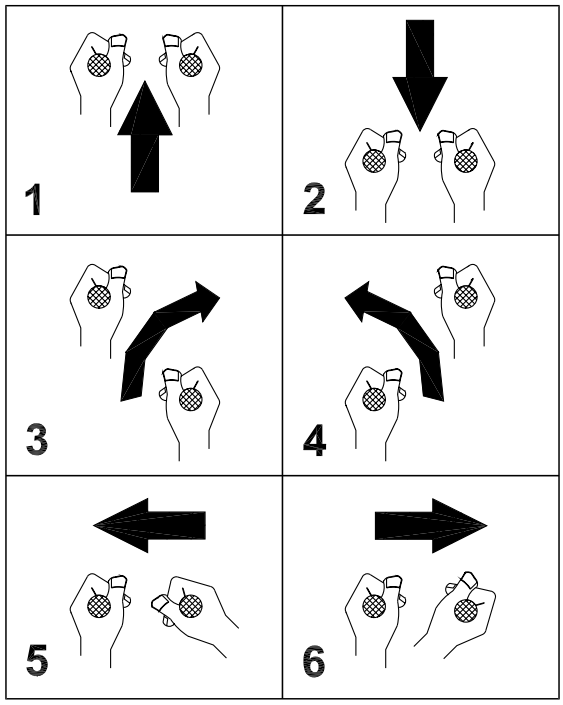
2 - reverse

3 - rotate clockwise

4 - rotate counter-clockwise

5 - left sideways

6 - right sideways



wc_gr000688

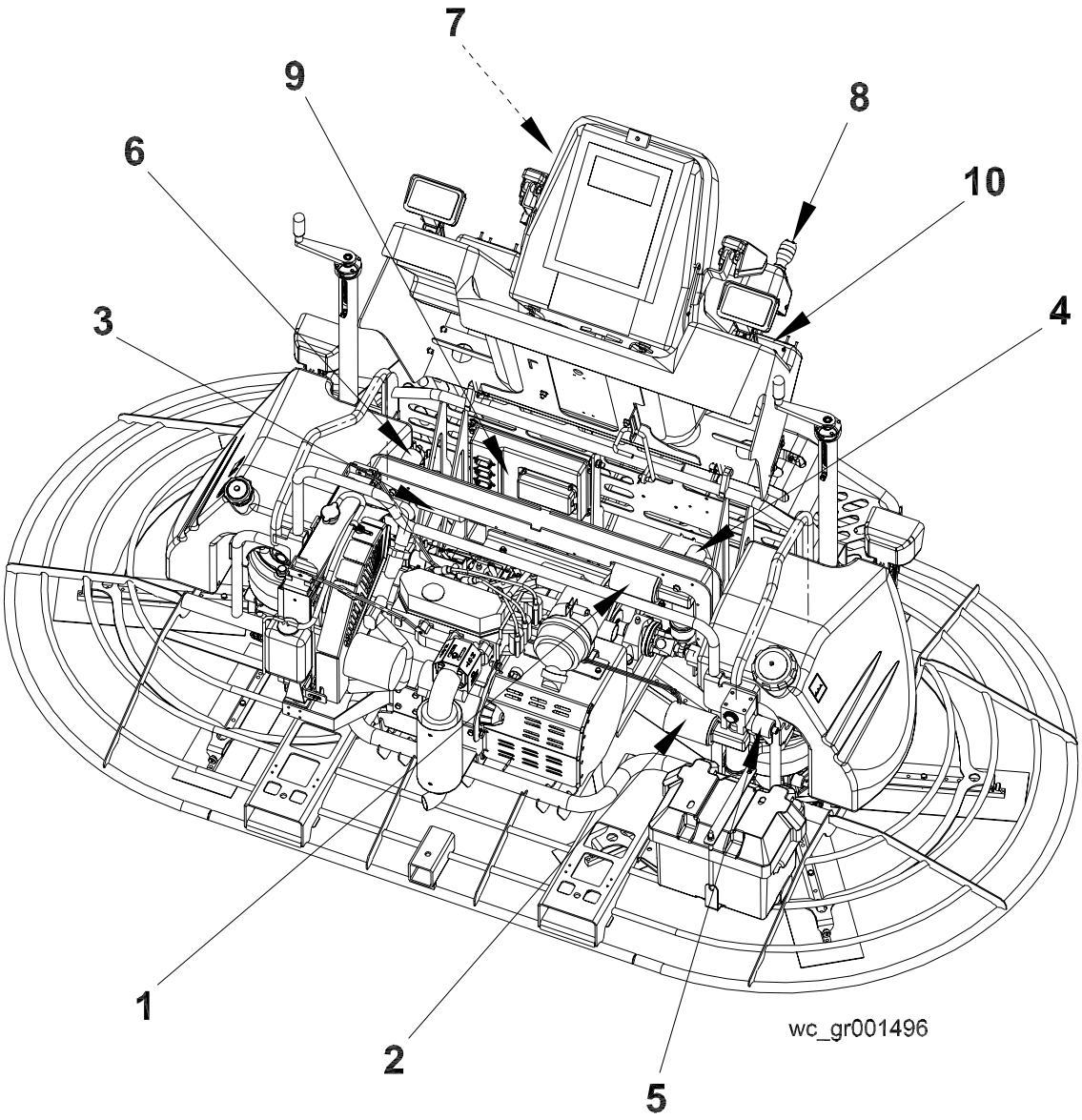
4.9 Status Indicator Lights

See Graphic: wc_gr001496

During normal operation, the green status indicator light will remain on. A flashing green light indicates the software is operating in “limp home” mode. This can occur if a load pin is damaged or has an open or short circuit in the wire harness. The “limp home” mode is designed to allow the operator to continue steering the trowel at a reduced level until a repair can be made. The trowel is calibrated at the factory and should not normally require calibrating. However, if a damaged load pin is detected, calibration may be required. Calibration may be done by contacting your local WACKER authorized service dealer.

The red status indicator light is used to flash error codes for troubleshooting. See chart below for error codes (listed in priority) and descriptions. The error code will continue to flash until the error is corrected. Multiple errors will flash in order of priority. After the first error is corrected the second error will flash and so on, until all errors are corrected.

Ref.	Description	Ref.	Description
111	Right control fault	231	Left load pin open circuit
121	Side control fault	232	Left load pin short circuit
131	Left control fault	311	Right joystick open circuit
211	Right load pin open circuit	312	Right joystick short circuit
212	Right load pin short circuit	321	Left joystick open circuit
213	Right load pin bent	322	Left joystick short circuit
221	Side load pin open circuit	414	Control board over temperature (above 80° C / 176° F)
222	Side load pin short circuit	415	Low battery voltage
223	Side load pin bent		



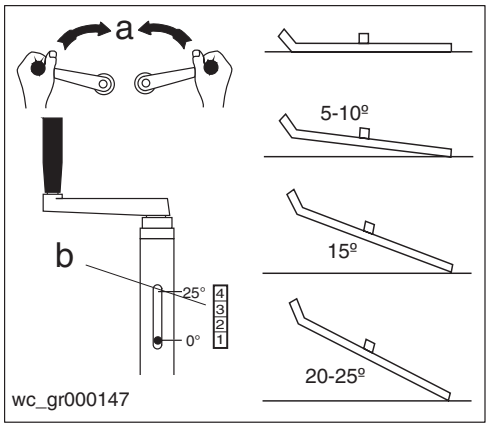
Ref.	Description	Ref.	Description
1	Right actuator	6	Left load pin
2	Side actuator	7	Left joystick
3	Left actuator	8	Right joystick
4	Right load pin	9	Control board
5	Side load pin	10	Status lights

4.10 Pitch Adjustment

See Graphic: wc_gr000147

When changing or setting the pitch (angle) of the trowel blades, slow the machine, set the desired pitch on the left side of the machine, then adjust the right side to match.

To **increase the** pitch, turn the pitch control inward **(a)**. Use the pitch indicator **(b)** to adjust pitch equally on both right and left trowel blades.



Working Conditions of Concrete	Suggested Working Pitch
1. Wet surface working stage	Flat (No Pitch)
2. Wet to plastic working stage	Slight Pitch
3. Semi-hard working stage	Additional Pitch
4. Hard finishing stage (burnishing)	Maximum Pitch

5. Maintenance

5.1 Periodic Maintenance Schedule

The chart below lists basic trowel and engine maintenance. Refer to engine manufacturer's Operator's Manual for additional information on engine maintenance. A copy of the engine Operator's Manual was supplied with the machine when it was shipped. To service the engine, tilt the seat forward.

	Daily	Every 20 hrs.	Every 50 hrs.	Every 100 hrs.	Every 200 hrs.	Every 300 hrs.
Grease trowel arms.	■					
Check fuel level.	■					
Check engine oil level.[1]	■					
Inspect air filter. Replace as needed.	■					
Check external hardware.	■					
Pressure wash all surfaces until free of concrete.[2]	■					
Check coolant level.	■					
Check oil level in gearboxes.		■				
Grease gearbox input shaft fitting		■				
Grease control linkage.[3]		■				
Check drive belt for wear.			■			
Change engine oil.[4]				■		
Check fuel filter.				■		
Clean and check spark plug.					■	
Replace oil filter.					■	
Check fan belt.					■	
Replace spark plug.						■
Replace fuel filter.						■
Replace gearbox pressure relief valve.						■
Replace oil in gearboxes.						■
Change coolant.						■

[1] Check engine oil twice daily (every 4 hours).
[2] Pressure wash immediately after use.
[3] Manual steering models only.
[4] Change engine oil after first 20 hours of operation.

5.2 Trowel Gearboxes

See Graphic: wc_gr000156

Check the gearboxes for the correct oil level after every 20 hours of operation. Change the gearbox oil every 300 hours.

To check the oil level:

Each CRT gearbox is equipped with two oil fill plugs. Remove one gearbox oil fill plug **(b)**. If the level is below the threads of the oil fill plug hole, add synthetic gear oil through the opening. DO NOT overfill. Wipe the threads dry on both the gearbox and the oil fill plug, apply Loctite 545 or equivalent to the oil fill plug threads, replace the oil fill plug and torque to 16–20 Nm (12–15 ft.lbs.).

***NOTICE*: DO NOT** mix types of gear oil. **DO NOT** overfill the gearbox with oil. Damage to the gearbox may occur if oils are mixed, or if the gearbox is overfilled. See *Technical Data* for oil quantity and type.

To change gearbox oil:

5.2.1 Place a container of sufficient capacity (approximately 3.8 l [1 gallon]) under each gearbox.

5.2.2 Remove the gearbox oil drain plug **(c)** and allow the oil to drain out. It may be necessary to remove the gearbox oil fill plug(s) to facilitate draining. After most of the oil has drained out, tip the back of the trowel upwards to allow the remaining oil to drain out.

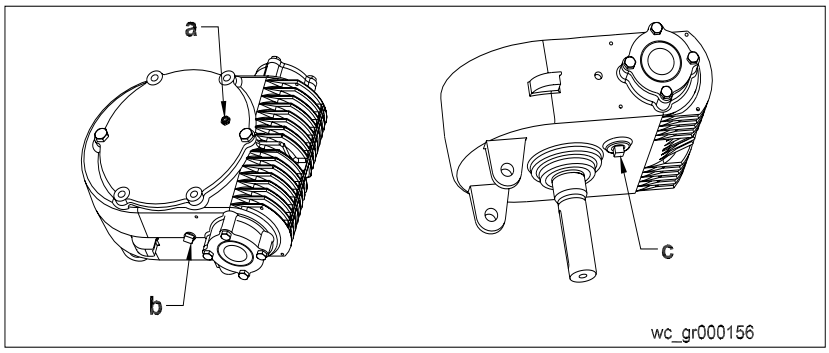
5.2.3 After all the oil has drained out, wipe the threads dry on both the gearbox and the oil drain plug, apply Loctite 545 or equivalent to the oil drain plug threads, and replace the gearbox oil drain plug.

Note: *Dispose of used gear oil in accordance with environmental protection legislation.*

5.2.4 With the trowel level, fill the gearbox with approximately 1.83 l (62 oz.) synthetic gear oil through the oil fill plug as described above.

5.2.5 Wipe the threads dry on both the gearbox and the oil fill plug, apply Loctite 545 or equivalent to the oil fill plug threads, replace the oil fill plug(s), and torque all plugs to 16-20Nm (12–15 ft.lbs.).

Each gearbox has a pressure relief valve **(a)** which can become clogged over time and should be replaced every 300 hours. Failure to replace the valve can result in oil leakage from the gearbox shaft seals.



5.3 Switching Blade Positions

See Graphic: wc_gr000255

To switch the position of the blades from the non-overlapping position **(f)** to the overlapping position **(g)**:

5.3.1 Place the trowel on a flat, level surface.

5.3.2 Remove the screws **(a)** holding the blade to the trowel arm.

5.3.3 CRT 48 only - Remove the plastic plug from the off-set screw hole **(b)** and place it into screw hole **(c)** to prevent it from filling with concrete.

5.3.4 Raise the trowel very slightly to take the weight off of the blades. Use a fork lift or dolly jacks.

5.3.5 Slide the blades to align them with the screw holes **(d)**.

CAUTION

Trowel blades may be sharp! Use adequate protection to keep from cutting skin or clothing!

5.3.6 Lower the trowel so the arms are securely against the blades.

5.3.7 Secure the screws into the screw holes **(d)**. Dip the threads of the screws in grease prior to installation. This will prevent concrete from cementing the screws in place and make removal of the blades easier later on.

Note: *Do not operate the trowel unless all blades are either in the overlapping or non-overlapping position.*

To switch the position of the blades from overlapping to non-overlapping, reverse the process.

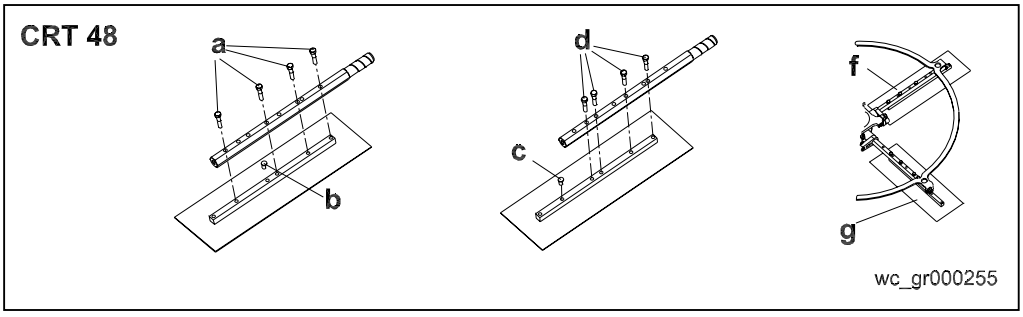
Blade Arm Adjustment Procedure

To eliminate wobble:

5.3.1 Pitch the blades flat.

5.3.2 Tighten lock nut located at the bottom of each pitch cable. Maximum cable play should be no more than 3.18 mm (.125”) or the width of the cable.

5.3.3 Set gap on all adjustable links to 4.58 mm (.180”).



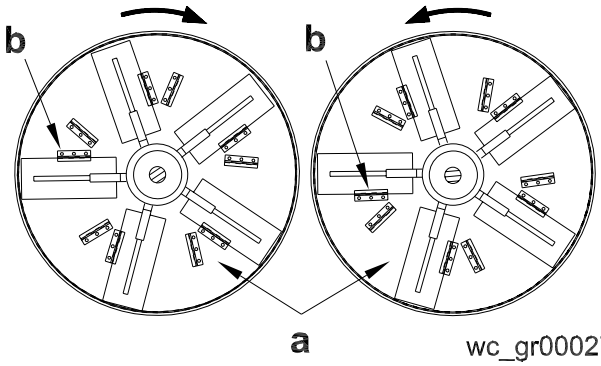
5.4 Mounting Float Pans

See Graphic: wc_gr000275

Certain applications may require the use of float pans. Optional float pans **(a)** are available, and are used with the machines in the non-overlapping configuration only.

To mount float pans:

Lift trowel off the ground **with the engine off** and position the pan against the blades. Turn pan either to the right or left to engage clip angles **(b)** as shown. Remember, the right-hand trowel blades turn counterclockwise; the left-hand blades turn clockwise.



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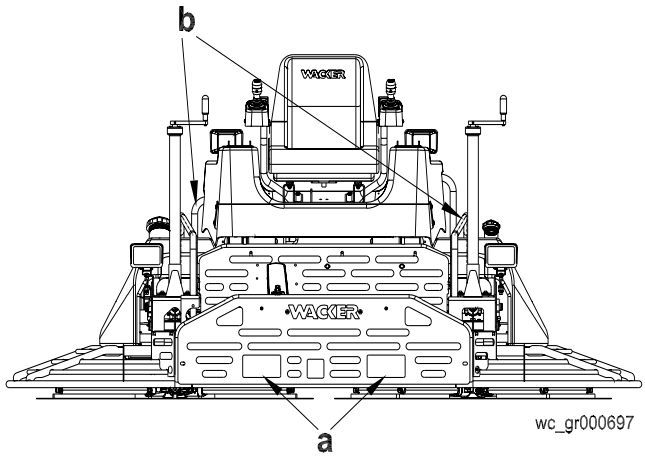


wc_gr000697

5.5 Transporting Trowels

See Graphic: wc_gr000697

To lift the trowel with a fork lift:

Fork lift pockets **(a)** are provided on both the front and back of the machine. Carefully run the fork lift's forks into either set of fork lift pockets.

To hoist the trowel:

Attach a sling or chains through the lifting bars **(b)** on each side of the seat pedestal.

***NOTICE*:** Make sure the lifting device has enough weight-bearing capacity to lift machine safely. Refer to Section *Technical Data.*

WARNING

DO NOT lift the trowel by the guard rings or any part of the trowel other than the lifting fixture, as the component may fail, causing the trowel to fall, possibly injuring bystanders.

5.6 Drive Belt

0009482 Revs. 123 and higher See Graphic: wc_gr003665
0009216, 0009482 Revs. 122 and lower See Graphic: wc_gr000152

To replace the drive belt:

5.6.1 Place the trowel on a flat, level surface with the blades pitched flat.

5.6.2 Disconnect battery.

5.6.3 Remove the beltguard.

Honda / Kohler:

Remove bolts holding guard in place.

Vanguard:

Remove two bolts holding base of air cleaner to beltguard. Remove two bolts holding beltguard to engine.

5.6.4 Remove 2 bolts **(d)**, washers **(e)** and nuts **(f)** from each bearing flange.

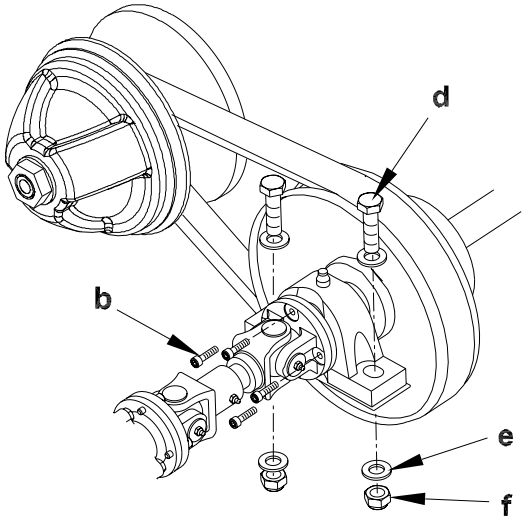
5.6.5 Remove the 4 bolts **(b)** holding each inside universal joint to the shaft fitting. Remove universal joints and shims (if included) from ends of drive shaft.

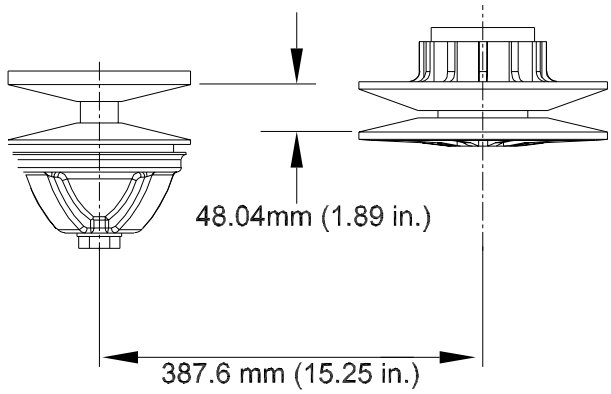
5.6.6 Lift the drive pulley up far enough to slide belt past.

5.6.7 Remove the old belt and install a new one.

5.6.8 Reverse the procedure for assembly. Align the bearings and shaft as straight as possible. Adjust pulley offset and center distance to values as shown.

5.6.9 Torque the bearing bolts **(d)** to 99±10 ft.lbs. Torque the universal joint bolts **(b)** to 10±1 ft.lbs.





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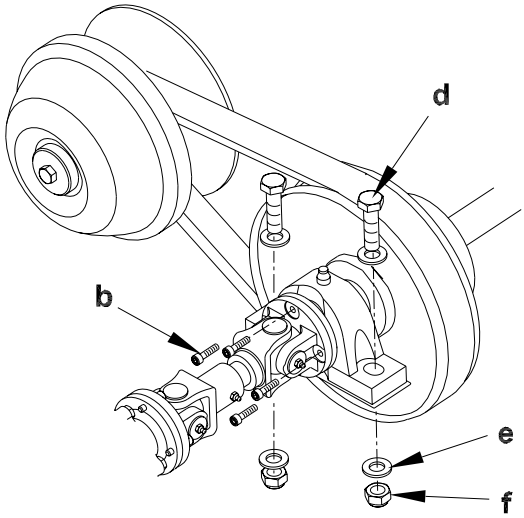
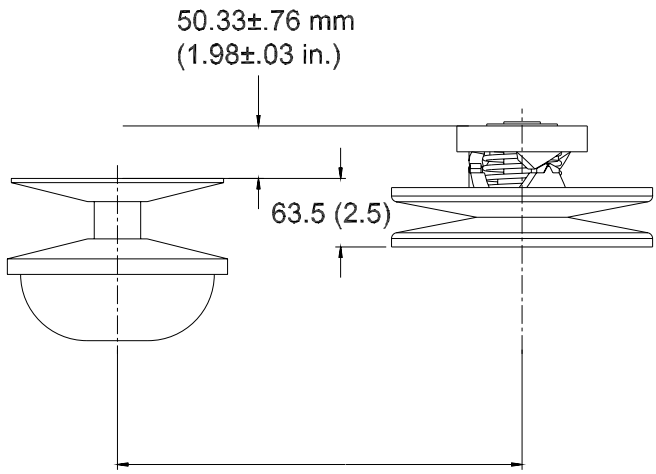




CRT 36 - 387.6 mm (15.25 in.)
CRT 48-25K - 305.0 mm (12.00 in.)
CRT 48-31V - 387.6 mm (15.25 in.)

wc_gr000152

5.7 Battery Jump Start Procedure

Occasionally, it may be necessary to jump start a weak battery. If jump starting is necessary, the following procedure is recommended to prevent starter damage, battery damage, and personal injuries.

DANGER

Jump starting a battery incorrectly can cause battery to explode, resulting in severe personal injury or death. Do not smoke or allow ignition sources near the battery, and do not jump start a frozen battery.

WARNING

Electrical arcing can cause severe personal injury. Do not allow positive and negative cable ends to touch.

5.7.1 Disconnect engine load.

5.7.2 Use a battery of the same voltage (12V) as is used with your engine.

5.7.3 Attach one end of the positive booster cable (red) to the positive (+) terminal of the booster battery. Attach the other end to the positive terminal of your engine battery.

5.7.4 Attach one end of the negative booster cable (black) to the negative

5.7.5 (–) terminal of the booster battery. Attach other end of negative cable to a solid chassis ground on your engine.

***NOTICE*:** Jump starting in any other manner may result in damage to the battery or the electrical system.

5.7.6 Push down on the throttle foot pedal, turn the engine keyswitch and hold it until the engine starts.

***NOTICE*:** Cranking the engine for more than 5 seconds can cause starter damage. If the engine fails to start, release the keyswitch and wait 10 seconds before operating the starter again.

***NOTICE*:** When using lights or high amperage draw accessories, idle the engine for a period of 20 minutes to bring the battery to charge state.

5.8 Spark Plug

Clean or replace spark plug as needed to ensure proper operation. Refer to the engine Owner's Manual.

Recommended Plug: Champion RC12YC

WARNING The muffler and engine cylinder become very hot during operation and remain hot for a while after stopping the engine. Allow engine to cool before removing spark plug.

5.8.1 Remove spark plug and inspect it.

5.8.2 Replace plug if the insulator is cracked or chipped. Clean spark plug electrodes with a wire brush.

5.8.3 Set gap to 0.76 mm (0.030 in).

5.8.4 Tighten spark plug securely.

***NOTICE*:** A loose spark plug can become very hot and may cause engine damage.

5.9 Air Cleaner

See Graphic: wc_gr000216

To service:

5.9.1 Unlock clamps **(d)** and remove cover **(c)**.

5.9.2 Remove cartridge **(b)** from air cleaner body **(a)**.

Clean by gently tapping cartridge. (Replace cartridge if very dirty or damaged.)

5.9.3 Carefully clean out air cleaner cover **(c)**.

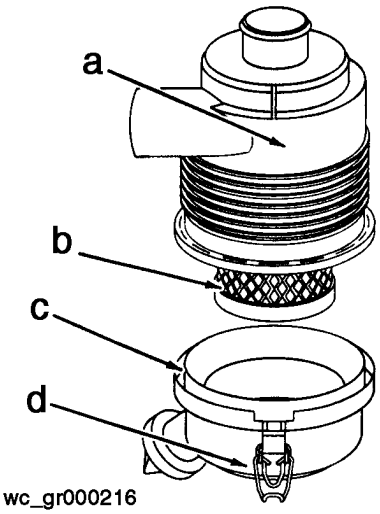
WARNING

NEVER use gasoline or other types of low flash point solvents for cleaning the air cleaner. A fire of explosion could result.

5.9.4 Install cartridge in body

5.9.5 Install cover and lock clamps.

***NOTICE*: NEVER** run engine without air cleaner. Severe engine damage will occur.



wc_gr000216

5.10 Engine Oil

See Graphic: wc_gr000217

Drain oil while engine is still warm.

5.10.1 Remove oil fill cap **(a)** and drain plug **(b)** to drain oil.

Note: *In the interests of environmental protection, place a plastic sheet and a container under the machine to collect any liquid which drains off. Dispose of this liquid in accordance with environmental protection legislation.*

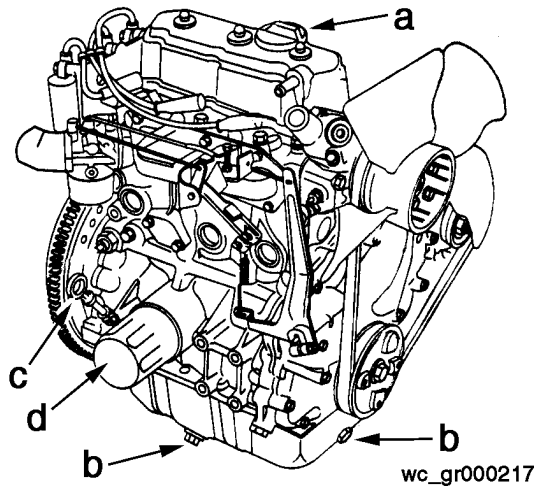
5.10.2 Install drain plug and torque to 34.6 Nm (25.5 ft.lbs.).

5.10.3 Fill engine crankcase with recommended oil until the level is between “L” and “F” on the dipstick **(c)**.

Oil capacity: 3 l (3.2 qt.).

5.10.4 Install oil fill cap.

5.10.5 To replace the oil filter **(d)**, remove the installed oil filter after oil has been drained. Apply a thin coat of oil to the rubber gasket of the replacement oil filter. Screw the filter on until it just contacts the filter adapter, then turn it an additional ½ turn. Refill with oil as described above.



5.11 Troubleshooting

Problem	Reason	Remedy
Engine does not start.	Operator present switch is not engaged.	Sit in operator's seat.
	Oil alert shutdown feature is activated.	Add oil to engine.
	Engine problem.	Oil alert shutdown feature is activated.
Machine out of balance; wobbling excessively.	Operator is over-steering.	The movement of each gearbox is controlled by “stops” to provide the correct relationship of the control arm movement to machine movement. Excessive pressure on control arms in any direction will not increase reaction time and can damage steering controls causing machine to wobble.
	Trowel arm(s) bent.	Replace trowel arm(s).
	Trowel blade(s) bent.	Replace trowel blade(s).
	Main shaft(s) bent due to machine being dropped.	Replace main shafts(s).
Machine does not move.	Drive belt broken.	Replace drive belt.
	Vacuum between bottom of blades and surface of concrete.	Change pitch on blades to break suction.
	Key sheared in the main shaft.	Replace damaged key.

Problem	Reason	Remedy
Machine does not respond correctly to control lever movement.	Sheared key.	Check all keys in drive system.
	Loose electrical connector on actuator or joystick.	Check all connections.
	Electronic control board failure.	Replace electronic control board.
Trowel noisy.	Trowel blades have become misaligned and are contacting each other during rotation.	Replace damaged blades. Align blades so that one set represents a (+) and the other an (x) when viewed from above.
	Sheared key.	Check all keys in drive system.
	Loose clutch.	Tighten clutch.

Notes

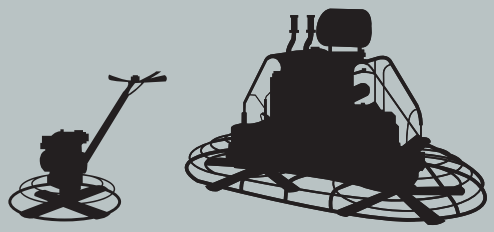
CONCRETE
POWER TROWELS

www.aem.org

ASSOCIATION OF AEM EQUIPMENT MANUFACTURERS

SAFETY MANUAL

FOR OPERATING AND MAINTENANCE PERSONNEL



SAFETY ALERT SYMBOL

This Safety Alert Symbol means ATTENTION is required!

The Safety Alert Symbol identifies important safety messages on machines, safety signs, in manuals or elsewhere. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

Why is SAFETY important to YOU?

3 BIG REASONS

- **Accidents KILL or DISABLE**
- **Accidents COST**
- **Accidents CAN BE AVOIDED**

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WORD OF EXPLANATION

The following is a partial list of reference material on safe operating practices:

U.S. Department of Labor publishes Safety and Health Regulations and Standards under the authority of the Occupational Safety and Health Act for the General Construction and Mining Industries. Its address is: U.S. Department of Labor, Washington, DC 20210 (www.OSHA.gov and www.MSHA.gov).

ANSI – American National Standards Institute, c/o The American Society of Mechanical Engineers, United Engineering Center, 345 East 47th Street, New York, NY 10017 (www.ANSI.org).

ISO – International Standards Organization, 1, rue de Varembe Case postale 56, CH-1211 Geneva 20, Switzerland (www.ISO.ch).

SAE – Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096, publishes a list, “Operator Precautions” SAE J153 MAY 87 (www.SAE.org).

AEM – Association of Equipment Manufacturers, 111 East Wisconsin Avenue, Milwaukee, WI 53202 (www.AEM.org).

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FOREWORD

This safety manual is intended to point out some of the basic situations which may be encountered during the normal operation and maintenance of your walk-behind or ride-on concrete power trowel and to suggest possible ways of dealing with these conditions.

Additional precautions may be necessary, depending on application and attachments used and conditions at the work site or in the maintenance area.

The trowel manufacturer has no direct control over machine application, operation, inspection, lubrication, or maintenance. Therefore, it is your responsibility to use good safety practices in these areas.

Do not use the trowel for any purpose other than its intended purposes or applications.

The information provided in this manual supplements the specific information about your machine and its application that is contained in the manufacturer's manual(s).

Other information which may affect the safe operation of your machine may be displayed on safety signs, or in insurance requirements, employer's safety programs, safety codes, local, state/provincial, and federal laws, rules, and regulations.

If you do not understand any of this information, or if errors or contradictions seem to exist, consult with your supervisor before operating your trowel!

IMPORTANT: If you do not have the manufacturer's manual(s) for your particular machine, get a replacement manual from your employer, equipment dealer, or manufacturer of your machine. Keep this safety manual and the manufacturer's manual(s) accessible to the operator and maintenance personnel.

A WORD TO THE USER

Remember that **YOU** are the key to safety. Good safety practices not only protect you but also protect the people around you. It is your responsibility to study this manual and the manufacturer's manual(s) for your specific machine before operating your machine. Make them a working part of your safety program. Keep in mind that this safety manual is written for concrete power trowels only. Practice all other usual and customary safe working precautions, and above all –

REMEMBER – SAFETY IS UP TO YOU

YOU CAN PREVENT SERIOUS INJURY OR DEATH

FOLLOW A SAFETY PROGRAM

EQUIPMENT/CLOTHING

Consult your supervisor for specific instructions on a job, and the personal safety equipment required. For instance, you may need:

- Hard Hat
- Heavy Gloves
- Eye Protection
- Ear Protectors
- Safety Shoes
- Dust Mask or Respirator

Do not wear loose clothing or any accessory – flopping cuffs, dangling neckties and scarves, or jewelry – that can catch in moving parts.

DUST PRECAUTION

Some dust created by construction activities may cause silicosis or respiratory harm.

Your risk of exposure varies depending on how often you do this type of work. To reduce your risk, work in a well ventilated area, use a dust control system, and wear approved personal safety equipment such as a dust/particle respirator designed to filter out microscopic particles.

LEARN TO BE SAFE

- Read the operator's manual. If one has not been provided, get one and study it before operating the equipment.
- Learn the location and understand the functions of all controls before attempting to operate the equipment.
- Know the meaning of all identification symbols on the controls and gauges.
- Check to determine that the manufacturer's furnished safety warning labels are securely attached to the trowel and all warnings can clearly read. Replace labels and decals if they are missing or become worn or unreadable.
- Know the location and type of emergency shut-down control the trowel is equipped with.
- Never start or operate the trowel without protective guards and panels in place.
- Know the capabilities and limitations of the trowel.

SAFETY DEVICES

Know what safety devices your trowel is equipped with … and see that each item is securely in place and in operating condition.

For example:

- Emergency stop switch or other "Shut-Down" devices
- Guards, Shields & Panels
- Alarms or Warning Lamps
- Drain Covers, Plugs, and Caps
- Pressure Relief Devices
- Lights

PREPARE FOR SAFE OPERATION

PRE-OPERATIONAL CHECKS

Walk around the trowel. Carefully inspect for evidence of physical damage, such as cracks, bends, or deformation of plates and welds. Check for loose, broken or missing parts on the trowel, including brackets, vibration isolators, nuts and bolts. Hardware should be replaced with original equipment manufacturer's (OEM) parts, and should be properly tightened to the manufacturer's recommendations.

Remove all trash and debris from the trowel. Make sure oily rags, leaves, or other flammable material are removed and not stored on the trowel. Avoid potential fire hazards!

Clean all oil or grease from operator areas such as control handles, foot pedals, or platforms to prevent slipping.

Check for fuel, oil, and hydraulic fluid leaks. All leaks must be corrected before the trowel is operated.

Inspect all hydraulic hoses for cracks or signs of wear and replace if necessary. Secure all caps and filler plugs for all systems.

Always use a a flashlight or shielded trouble light when checking for leaks – never use an open flame. Never check for hydraulic leaks with your hand. Hydraulic systems are under high pressure and leaks in these systems can penetrate the skin which can result in serious injury or even death. Always use a piece of cardboard or wood when looking for hydraulic leaks.

Be sure the trowel is properly lubricated. See that the fuel, lubricating oil, coolant and hydraulic reservoirs are filled to the proper levels with the correct fluids according to the manufacturer's instructions and recommendations.

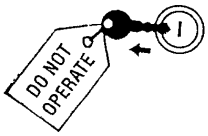
FIRE PREVENTION

Always stop the engine and allow it to cool before refueling.

Never refuel –

- When engine is running
- Near open flame or sparks
- While smoking
- In poorly ventilated areas

Never overfill fuel tanks or fluid reservoirs. In the event of a fuel spill, do not attempt to start the engine until the fuel residue has been completely wiped up, and the area surrounding the engine is dry. Replace fuel cap securely after refueling.



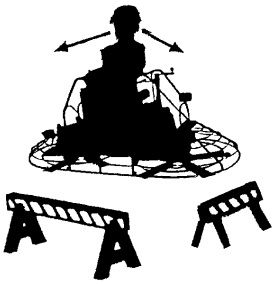
Inspect electrical wiring for damage or wear.

Batteries produce explosive gas. Keep open flame or sparks away.

In case of accident or fire, be ready to act quickly, yet calmly. Do not panic. Knowing ahead of time where to locate a first aid kit, fire extinguisher, or to get assistance will help should an emergency situation come up.

CHECK THE WORK AREA

Learn – beforehand – as much about your working area as possible.



Be observant of other workers, bystanders and other machinery in the area. Keep all unauthorized, untrained people and children out of the area while the trowel is in operation.

CHECK THE AREA

Thoroughly check the area for unusual or dangerous conditions, such as tools, or items that may damage the trowel or be propelled by the trowels rotating blades. Note where pipes and forms are located. Locate and mark protrusions (rebar, anchor bolts, floor drains, etc.) in the concrete.

GETTING ON AND OFF A RIDE-ON TROWEL

If operating a ride-on trowel, mount and dismount carefully. Use the steps and hand holds provided. Do not use control levers as hand holds and never use guard rings as steps. Watch for surfaces that may be slippery. Never jump off a ride-on trowel.

OPERATING ON AN ELEVATED DECK (MULTI-STORY OPERATION)

Consult local/state regulations before you operate equipment on an elevated deck. If operating on an elevated deck, ensure perimeter safety cabling of proper size and strength is in place. Do not operate the trowel close to the edge of the deck.

TRANSPORTING THE TROWEL

Never transport the trowel with float pans attached unless safety catches are used and are specifically cleared for such transport by the manufacturer. Under no circumstances hoist the trowel more than three feet off the ground with float pans attached. Always consult the manufacturer's operation manual for specific information on transporting the trowel.

START CORRECTLY – START SAFELY

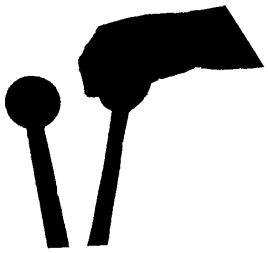
Before starting, check for proper functioning of all operation and shutdown controls. Check all controls to be sure they are in the correct startup position. Know the proper starting procedure for your trowel. Follow the manufacturer's operational instructions.

WALK-BEHIND TROWELS

- Ensure that the operator is familiar with the trowel and is trained on its operation.
- Ensure the operator is well rested, not fatigued, is alert, and not impaired in any way (medications, drugs, alcohol, etc.).
- Do not start or operate the trowel if the drive train will not disengage. Centrifugal force between the trowel and surface when starting can cause uncontrolled handle movement that can cause serious injury. The handle must not move while pulling the engine recoil starter.
- Visually check to be sure that the blades are free of obstructions and the area is clear for operation.
- For trowels that use this feature, ensure that the emergency stop switch is in the ON position.
- Move the throttle to the idle position.
- Switch the engine ON/OFF switch to the ON position.
- Never place your foot on the ring guard when starting the engine or severe injury can occur if your foot slips through the ring guard as the blades start to spin.
- While firmly holding the handle with one hand, start the engine following the guidelines in the engine manufacturer's instruction manual.
- Hold the handle bar firmly with both hands while the trowel is "throttled-up".
- If control of the trowel is lost, stay clear and do not attempt to regain control until the trowel has stopped moving. Depending on the engine speed, the trowel handle can swing around before it stops completely.
- You are ready to operate the trowel!

RIDE-ON TROWELS

- Ensure that the operator is familiar with the trowel and is trained on its operation.
- Ensure the operator is well rested and not fatigued, is alert, and not impaired in any way (medications, drugs, alcohol, etc.).
- Adjust the seating if necessary and get into a comfortable position where all controls are accessible.
- Visually check to be sure that the blades are free of obstructions and the area is clear for operation.
- Start the trowel following the instructions in the engine manufacturer's operation manual. For diesel powered trowels, follow the instructions for glow plug and cold start operation.
- Observe any gauges and warning lights to ensure they are functioning and their readings are within the manufacturer's normal operating range.
- Check operation of controls. Make certain they operate properly.
- You are ready to operate the trowel!



SAFE WORKING PROCEDURES

DANGER – CARBON MONOXIDE

Exhaust from the engine contains poisonous carbon monoxide gas that is not easily detected as it is colorless and odorless. Exposure to carbon monoxide can cause loss of consciousness and may lead to death! Do not operate your trowel indoors or in an enclosed area unless adequate ventilation is provided. Ensure that permissible carbon monoxide levels are monitored and not exceeded.

OTHER PRECAUTIONS

- Never leave the trowel unattended while it is running.
- Always keep clear of rotating or moving parts.
- Never use additional weights other than the weights recommended by the manufacturer. The use of unauthorized weights could lead to personal injury or damage to the trowel.
- Never fill the fuel tank while the engine is running. Turn the engine off and allow it to cool before refueling.
- The muffler, exhaust pipes and other engine parts will become hot during operation and will remain hot for a while after shutdown. Do not touch until allowed to sufficiently cool. Do not allow debris, rags, paper, or leaves to accumulate around these areas.

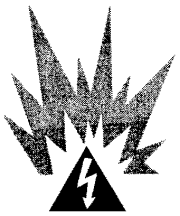
- Do not keep tools, buckets, loose materials on the trowel while it is running and never allow anyone other than the operator on or near the trowel while it is in operation.
- Do not use the trowel for any purpose other than its intended purposes or applications.

WORK SAFELY

ELECTRICAL EQUIPMENT

Some walk-behind trowels are powered by electric motors. Electric motors and components present special hazards during operation. Read the operator's manual.

- Never operate a trowel with a damaged or worn electrical cord. When using an extension cord, be sure to use one heavy enough to carry the current load. When trowel is used outdoors, use only extension cords that are marked for outdoor use.
- Use only appropriate extension cords that have grounding-type plugs and receptacles that accept the machine's plug.



- Keep all electrical cords away from rotating elements, heat, oil, and sharp edges to avoid damaging them.
- Avoid body contact with grounded surfaces such as pipes, metal railings, radiators and metal ductwork.
- Always check the power supply before running the trowel. Using the wrong voltage supply will damage the motor.
- Always make sure the motor switch is OFF or in the stop position before plugging the trowel into the power supply.
- Do not operate an electric powered trowel in the rain or snow. Keep the motor, switch, and electrical cords dry.
- Never operate the trowel in areas exposed to flammable or explosive liquids or gases. Sparks could ignite fumes.

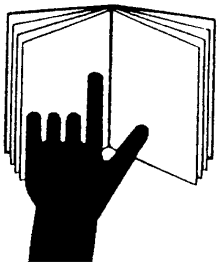
SHUT DOWN SAFELY

SHUT DOWN PROCEDURES

Never disable or disconnect the safety devices!

Always close fuel valves when the machine is not being used.

Refer to the manufacturer's manuals for specific shut down procedures.



LOAD AND UNLOAD SAFELY

PRECAUTIONS

- Power trowels are heavy and awkward to move around.
- Do not attempt to lift the ride-on trowel by the guard rings.
- Use proper heavy lifting procedures.
- Keep all non-essential personnel clear of the area.
- Never hoist the trowel over areas where people are standing or working.
- Remove tools and loose items before lifting.
- Make sure the crossbars on the safety catches are in good condition if so equipped.
- Always consult your operator's manual for the best and proper lifting, loading, and unloading methods.

WALK-BEHIND TROWELS

Some walk-behind trowels can be lifted or moved by two people utilizing lifting tubes or other special attachments. Generally however, they must be lifted using lifting bales (special lifting brackets), or other specific lifting points provided by the manufacturer, and cranes, hoists, or forklifts. Be certain any lifting devices used have adequate capacity.

RIDE-ON TROWELS

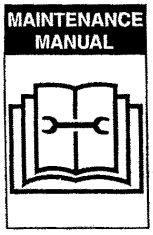
Ride-on trowels are very heavy. They require heavy-duty lifting devices such as cranes or heavy-duty hoists to lift them on and off the concrete slab.

Be certain any lifting devices used have adequate capacity. Some ride-on trowels are equipped with lifting bosses that are used with specialized apparatus to assist in moving the trowels around. Use extreme care when lifting or moving a ride-on trowel.

STORAGE

Always store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of reach of children.

SERVICE AND MAINTENANCE SAFETY



Poorly maintained equipment can become a safety hazard! In order for your trowel to operate safely and properly over a long period of time, periodic maintenance and occasional repairs are necessary.

Do not attempt to clean, service, or perform adjustments on the trowel while it is running.

GOOD HOUSEKEEPING

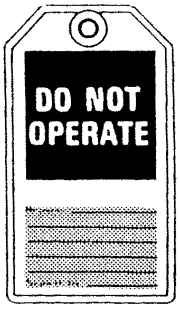
Keep area clean and dry if possible. Oily and wet surfaces are slippery; greasy rags are a fire hazard; wet spots are dangerous around electrical equipment.

GENERAL PROCEDURES

Do not perform any work on the trowel unless you are authorized to do so.

Standard maintenance procedures should always be observed. Read the manufacturer's manual or find assistance if you do not understand what you are doing.

Maintenance can be dangerous unless performed properly. Be certain that you have the necessary skill and information, correct tools and equipment to do the job correctly.



Attach a Do Not Operate tag or similar warning tag to the control panel (or handle on walk-behind trowels), and disconnect the battery (disconnect the spark plug wire on walk-behind trowels), before performing maintenance on the machine.

Disconnect the electric cord on electrical machines.

PERFORM MAINTENANCE SAFELY

FORM GOOD DRESS HABITS

Loose clothing and jewelry can catch in moving parts and cause serious injury.

Keep hands – and clothing – away from moving parts.

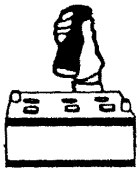
GUARDS AND SAFETY DEVICES

After performing maintenance make certain all guards and panels have been reinstalled and all safety devices are functional.

BATTERY MAINTENANCE

Always wear eye and face protection.

Batteries produce explosive gases. Keep open flame or sparks away. See the manufacturer's instructions when servicing the batteries, when using jumper cables, or when using a battery charger.



Use a flashlight to check battery electrolyte level. Always check with engine stopped.

Battery electrolyte is poisonous. It is strong enough to burn your skin, eat holes in clothing, and can cause blindness if splashed into eyes. Always wear eye and face protection.

Flush any contacted area with water immediately.

FIRE PREVENTION

Avoid fire hazards.

Always stop the engine and allow it to cool before you refuel the trowel. Do not refuel while smoking or near open flame or sparks. Never overfill fuel tanks or fluid reservoirs.

Remove all trash or debris. Make sure oily rags or other flammable materials are not stored on or in the trowel.

Check for fuel, oil, or hydraulic fluid leaks. Repair the leaks and clean the machine before you operate it.

Inspect electrical wiring or worn or frayed insulation. Install new wiring if wires are damaged.

Do not weld or flame cut on pipes, tubes, or tanks that contain flammable fluids or gases.

Ether and starting fluid is flammable. Do not smoke when using. Always follow the instructions on the can and in the manufacturer's manual for your trowel.

Always use a safe, nonflammable solvent when you clean parts. Do not use flammable fluids or fluids that give off harmful vapors.

Store all flammable fluids and materials away from your work area.

Whenever the sparkplug is removed, do not test for spark on gasoline powered engines if engine is flooded or the smell of gasoline is present. A stray spark could ignite fumes.

Know where fire extinguishers are kept – how they operate – and for what type of fire they are intended!

Check readiness of fire suppression systems and fire detectors (is so equipped).

PERFORM MAINTENANCE SAFELY

EXHAUST FUMES

Engine exhaust fumes can cause sickness or death. When performing maintenance, if it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area when an exhaust pipe extension. If you do not have an exhaust pipe extension, make sure you open the doors and get outside air into the area.

Ensure that permissible carbon monoxide levels are monitored and not exceeded.

FLUID SIPHONING

Never siphon gasoline or hydraulic fluid using a hose and suction by mouth. Ingestion of these fluids even in small amounts will require immediate medical attention and can cause death.

COOLING SYSTEM

Maintain the cooling system according to the manufacturer's instructions.

Hot coolant can spray out and you can be burned if you improperly maintain or service the cooling system.

Remove filler cap only when cool.

TROWEL BLADES AND PANS

- Do not attempt to clean, service or perform adjustments on the trowel while it is running.
- Do not remove while the trowel is hanging overhead. Always support the trowel securely on a flat, level surface before changing blades or pans.
- Always handle blades and pans carefully. Worn blades or pans may develop sharp edges that can cause serious cuts.
- Always replace worn or damaged parts with service parts designated by the manufacturer.
- Replace blades and pans as a complete set – even if only one blade or pan is showing wear or damage. They can wear differently depending on different jobs, and a difference in blade size will damage the finish of the slab surface.

HYDRAULIC SYSTEMS

Hydraulic fluid systems operate under high pressure. Even a small leak can have enough force to penetrate the eyes or skin. If injury occurs, seek immediate medical treatment by a physician familiar with injuries that are caused by hydraulic oil escaping under pressure.

Use a piece of wood or cardboard to find hydraulic oil leaks. Do not use your bare hands.

Wear safety glasses to prevent injuries to the eyes.

TEST YOUR KNOWLEDGE

Do you understand this AEM manual and items such as –

- Your safety program?
- Your trowel manufacturer's manual(s)?
- Proper clothing and personal safety equipment?
- Your trowel's controls, warning signs and devices, and safety equipment?
- Proper trowel lifting and moving procedures?
- How to inspect and start your trowel?
- How to check your trowel for proper operation?
- Proper working procedures?
- Proper shut down procedures?
- Your work area and any special hazards that may exist?
- Under what conditions you should not operate your trowel?

If you do not understand any of these items, consult with your supervisor before operating your trowel.

A FINAL WORD TO THE USER

Remember that **YOU** are the key to safety. Good safety practices not only protect you but protect the people around you.

You have read this safety manual and the manufacturer's manual(s) for your specific trowel. Make them a working part of your safety program. Keep in mind that this safety manual is written for only this type of machine.

Practice all other usual and customary safe working precautions, and above all –

REMEMBER – SAFETY IS UP TO YOU

YOU CAN PREVENT SERIOUS INJURY OR DEATH

This manual is another in a series on the safe operation of machinery published by AEM.
For additional publications visit our web site at www.aem.org.

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FORM PT-160

EC DECLARATION OF CONFORMITY
CE-KONFORMITÄTSERKLÄRUNG
DECLARACIÓN DE CONFORMIDAD DE LA CE
DÉCLARATION DE CONFORMITÉ C.E.

WACKER CORPORATION, N92 W15000 ANTHONY AVENUE, MENOMONEE FALLS, WISCONSIN USA

AUTHORIZED REPRESENTATIVE IN THE EUROPEAN UNION BEVOLLMÄCHTIGTER VERTRETER FÜR DIE EUROPÄISCHE GEMEINSCHAFT REPRESENTANTE AUTORIZADO EN LA UNIÓN EUROPEA REPRÉSENTANT AGRÉÉ AUPRÈS DE L'UNION EUROPÉENNE	**WACKER CONSTRUCTION EQUIPMENT AG** **Preußenstraße 41** **80809 München**

hereby certifies that the construction equipment specified hereunder / bescheinigt, daß das Baugerät / certifica que la máquina de construcción / atteste que le matériel :

1. Category / Art / Categoría / Catégorie

Ride-On Trowels
Besitzbare Flügelglätter
Alisadoras Dobles
Truelles auto portées

2. Type - Typ - Tipo - Type

CRT 36, CRT 48

3. Item number of equipment / Artikelnummer / Número de referencia de la máquina / Numéro de référence du matériel :

0009083, 0009232, 0009483, 0620027, 0009084, 0009085, 0009086, 0009216, 0009481, 0009482

has been produced in accordance with the following standards:
in Übereinstimmung mit folgenden Richtlinien hergestellt worden ist:
ha sido fabricado en conformidad con las siguientes normas:
a été produit conforme aux dispositions des directives européennes ci-après :

98/37/EC
89/336/EC
pr EN 12649

William Lahner
Vice President of Engineering

Robert Motl
Manager, Product Engineering

18.08.04
Date / Datum / Fecha / Date

WACKER CORPORATION

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